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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,423	11/21/2003	Eric R. Hansen	204560-73806	3387
7590 BARMES & THORNBURG 11 South Meridian Street Indianapolis, IN 46204			EXAMINER LU, JIPING	
			ART UNIT 3743	PAPER NUMBER
			MAIL DATE 12/14/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/719,423

Applicant(s)

HANSEN ET AL.

Examiner

Jiping Lu

Art Unit

3743

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8, 13, 19-29 and 31-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8, 13, 19-29, 31-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on 12/2/2010 under 37 CFR 1.116 has been entered.

Allowable Subject Matter

2. The indicated allowability of claims 19-29, 31-34 is withdrawn in view of the newly discovered reference(s) to Falla (U. S. Pat. 2,007,676) and De Vaney (U.S. Pat. 2,590,090).

Rejections based on the newly cited reference(s) follow.

Information Disclosure Statement

3. The information disclosure statement filed 3/4/09 fails to comply with 37 CFR 1.97(d) because it lacks the fee set forth in 37 CFR 1.17(p). It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 8 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Falla (U. S. Pat. 2,007,676).

Falls discloses a method of operating a lime kiln having an inclined rotary vessel 20, the method comprising the steps of advancing lime mineral (from hopper 23) from an upper end of the inclined rotary vessel to a lower end of the inclined rotary vessel, introducing combustion air and combustible fuel in a sub-stoichiometric ratio through the lower end of the rotary vessel (by burner 25, page 1, right column, lines 50-59), generating a flame at the lower end of the rotary vessel (see Fig. 1), and introducing additional combustion air through an opening in a wall of the rotary vessel at a location downstream, relative to a kiln gas stream, of the flame and between the lower end of the rotary vessel and the upper end of the rotary vessel (thru nozzle 30), wherein the step of advancing lime mineral comprises advancing lime mineral through a calcining zone of the rotary vessel to liberate CO₂ from the lime mineral and the step of introducing additional combustion air comprises introducing additional air into the calcining zone of the rotary vessel (page 1, right column, line 57 to page 2, left column, line 9).

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
7. Claims 19-21, 23-25, 26-29, 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Falla (U. S. Pat. 2,007,676) in view of De Vaney (U. S. Pat. 2,590,090).

Falla disclose a method of operating a preheater/precalciner kiln having an inclined rotary vessel 20, the method comprising the steps of advancing mineral (from hopper 23) into an upper end of the inclined rotary vessel 20, advancing mineral from the upper end of the rotary vessel to a lower end of the inclined rotary vessel, introducing a first quantity of combustion and

combustible fuel through the lower end of the rotary vessel in a sub-stoichiometric ratio (thru burner 25, page 1, right column, lines 50-59), and introducing a second quantity of combustion air through an opening (at 50) in a wall of the rotary vessel at a location between the lower end of the rotary vessel and the upper end of the rotary vessel. The step of advancing mineral comprises advancing mineral through a calcining zone of the rotary vessel to liberate CO₂ from the mineral, and the step of introducing the second quantity of combustion air comprises introducing the second quantity of combustion air into the calcining zone of the rotary vessel (page 1, right column, line 57 to page 2, left column, line 9). The air nozzle has a pressurized air source 45, 48 coupled thereto and the step of introducing the second quantity of combustion air further comprises introducing pressurized air from the pressurized air source 45, 48 through the nozzle 30. Falla also discloses a mineral processing kiln comprising an inclined rotary vessel 20 having a lower end and an upper end, the rotary vessel 20 having an air inlet opening (at 50) defined therein at a location between the upper end and the lower end thereof, a stationary hood 60 positioned proximate to the lower end of the rotary vessel 20, and a burner 25 positioned proximate to the lower end of the rotary vessel, an air nozzle 30 extending into the rotary vessel through the air inlet opening of the wall of vessel and a pressurized air source 45, 48 coupled to the air nozzle 30, primary combustion air source (not shown, air jets) adapted to advance combustion air through the stationary hood and the primary air source and the burner are operable to create sub-stoichiometric air/fuel conditions in the lower end of the rotary vessel (page 2, right column, lines 50-59). Falla discloses all that is recited in claims 19-21, 23-34 except for a preheating/precalcining assembly positioned proximate to the upper end of the rotary vessel. De Vane teaches a mineral processing kiln and method comprising a preheating assembly 7'

positioned proximate to the upper end of the rotary vessel 1 for saving heat (col. 4, lines 19-48) same as claimed. The preheating assembly 7' comprises a stationary vessel 7' through which mineral passes prior to advancement into the rotary vessel and a kiln gas stream (from 25) passes in contact with the mineral subsequent to advancement out of the rotary vessel (see Figure). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the mineral processing method and kiln of Falla to include a preheating assembly as taught by De Vaney in order to save heat energy.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Falla (U. S. Pat. 2,007,676) in view of De Vaney (U. S. Pat. 2,590,090) as applied to claim 19 above, and further in view of Baukal, Jr. et al. (U. S. Pat. 5,413,476).

The mineral processing method of Falla as modified by De Vaney as above includes all that is recited in claim 22 except for the mass flow rate of the second quantity of combustion air. With regard to the claimed numerical ranges of the combustion air mass flow rate, it is deemed to be an obvious matter of design choice since applicant has not established that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. In re Woodruff, 919 F.2d 1575, 1578 (Fed. Cir. 1990) and since it had been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456 (CCPA 1955). Baukal demonstrates that the molar ratio of oxygen to fuel injected at the burner as compared to the overall molar ratio of oxygen to fuel injected is a variable which affects the resulting amount of NO_x emissions. For combustion air having a fixed oxygen content the molar quantity of oxygen delivered to the burner is directly dependent upon the mass

flow rate of the oxygen-containing combustion air delivered. Thus, introducing about 1% to about 15% by mass of the total combustion air downstream is essentially the same as introducing about 1% to about 15% by molar quantity of the total oxygen downstream. Baukal specifically mentions values within this range. See Baukal Table 4, claim 3. Even accounting for differences in oxygen content, one of ordinary skill in the art would recognize that optimization of the molar quantity of oxygen delivered to the burner, as compared to the overall amount, could be effected by altering the proportion of air injected downstream, as opposed to at the burner. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the mineral processing method of Falls to introduce second quantity of combustion air at a mass flow rate of about 1% to about 15% of the rate of mass consumption of combustion air as taught by Baukal, Jr. et al. in order to pursue an intended use.

Response to Arguments

9. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jiping Lu whose telephone number is 571 272 4878. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KENNETH RINEHART can be reached on 571-272-4881. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jiping Lu/
Primary Examiner
Art Unit 3743

J. L.